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A01N-037/28; A01N-043/02; A01N-043/40; A01N-043/78

(19) (CA) APPLICATION FOR CANADIAN PATENT (12)

(54) N-Hydroxy-N-Phenylcarboxamides, Their Preparation and
Compositions Containing Them for Controlling Harmful
Fungi

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(71) Same as inventor

(30) (DE) P 42 31 518.2 1992/09/21

(57) 7 Claims

Notice: This application is as filed and may therefore contain an
incomplete specification.



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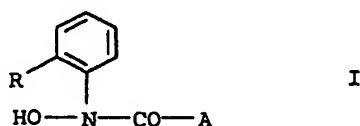
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N-Hydroxy-N-phenylcarboxamides, their manufacture, and agents containing them for combatting injurious fungi

5 ABSTRACT OF THE DISCLOSURE:

1. N-Hydroxy-N-phenylcarboxamides of the formula I

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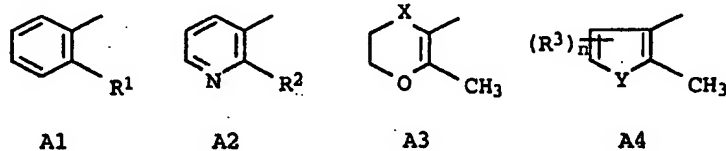
where:

R is substituted or unsubstituted alkyl, alkoxy, alkenyl, alkenyloxy, alkynyl, alkynyloxy, cycloalkyl, cycloalkenyl, cycloalkyloxy, cycloalkenyloxy or phenyl;

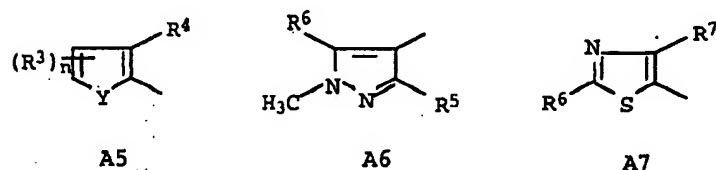
20

A is one of the radicals A1 to A7

25



30



35

where

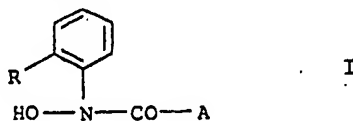
X is -CH₂-, -S-, -SO- or -SO₂-;
Y is -O- or -S-;
R¹, R², R⁴, R⁵ and R⁷ are halogen, alkyl or haloalkyl;
R³ and R⁶ are hydrogen, halogen or alkyl;
n is 1 or 2;

45

methods of manufacturing them, agents containing them, and their use for combatting injurious fungi.

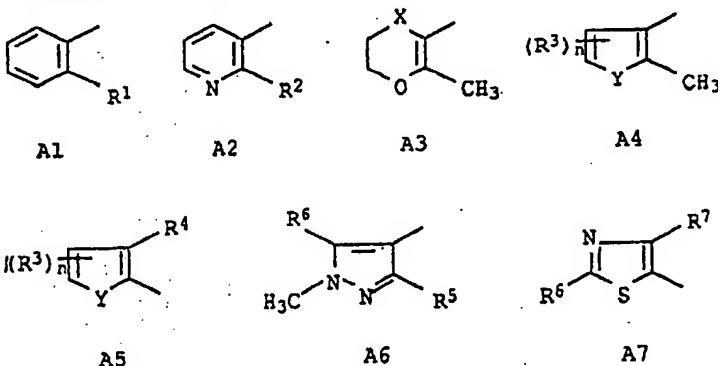
N-HYDROXY-N-PHENYLCARBOXAMIDES, THEIR PREPARATION
AND COMPOSITIONS CONTAINING THEM FOR CONTROLLING
HARMFUL FUNGI

The present invention relates to N-hydroxy-
5 N-phenylcarboxamides of the formula I



where the substituents have the following meanings:

- R is C₂-C₁₂-alkyl, C₂-C₁₂-alkoxy, C₃-C₁₂-alkenyl,
C₃-C₁₂-alkenyloxy, C₃-C₆-alkynyl, C₃-C₆-alkynyloxy,
10 where these groups can be partially or completely
halogenated; C₃-C₇-cycloalkyl, C₄-C₇-cycloalkenyl,
C₃-C₇-cycloalkoxy or C₄-C₇-cycloalkenyloxy, where
these rings can carry one to 3 C₁-C₄-alkyls; phenyl
which can carry one to five halogen atoms and/or one
to three of the following radicals: C₁-C₄-alkyl,
15 C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy,
C₁-C₄-alkylthio or C₁-C₄-haloalkylthio;
A is a cyclic radical from the group consisting of the
formulae A1 to A7:



- where the substituents have the following meanings:
20 X is -CH₂-, -S-, -SO- or -SO₂-;
Y is -O- or -S-'
R¹, R², R⁴, R⁵ and R⁷ are halogen, C₁-C₄-alkyl or

C_1-C_4 -haloalkyl;

R^3 and R^4 are hydrogen, halogen or C_1-C_4 -alkyl;

n is 1 or 2, where the radicals R^3 can be different if the value of n is 2.

5 The invention additionally relates to the preparation of these compounds, compositions containing them and their use for controlling harmful fungi, in particular Botrytis.

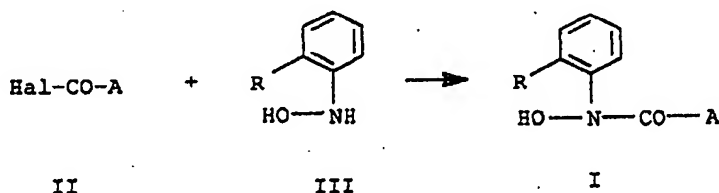
10 N-(2-Chlorophenyl)-2-chloronicotinamide is known from the literature as a fungicidal active compound (DE-A 2 417 216).

It is an object of the present invention to provide novel fungicidally active compounds having an improved spectrum of action.

15 We have found that this object is achieved by the compounds I defined at the beginning.

We have additionally found processes for preparing these compounds, compositions containing them and their use for controlling harmful fungi.

20 The compounds I are in general obtained by reacting a carboxylic acid halide of the formula II in a manner known per se (eg. J. March, Advanced Organic Chemistry, 2nd Ed., 1977, 382 ff., McGraw-Hill) with an N-hydroxyaniline of the formula III in the presence of a
25 base.



The radical Hal in the formula II is a halogen such as chlorine, bromine or iodine, in particular chlorine or bromine.

30 This reaction is customarily carried out at temperatures from -20°C to 100°C , preferably -10°C to

50°C.

Suitable solvents are:

aliphatic hydrocarbons such as pentane, hexane, cyclohexane and petroleum ether, aromatic hydrocarbons such as
5 toluene, o-, m- and p-xylene, halogenated hydrocarbons
such as dichloromethane, chloroform and chlorobenzene,
ethers such as diethyl ether, diisopropyl ether, tert-
butyl methyl ether, dioxane, anisole and tetrahydrofuran,
nitriles such as acetonitrile and propionitrile, ketones
10 such as acetone, methyl ethyl ketone, diethyl ketone and
tert-butyl methyl ketone, alcohols such as methanol,
ethanol, n-propanol, isopropanol, n-butanol and tert-
butanol, and also dimethyl sulfoxide and dimethyl-
formamide, particularly preferably toluene, xylene and
15 tetrahydrofuran.

Mixtures of the solvents mentioned can also be used.

Suitable bases are generally inorganic compounds
such as alkali metal and alkaline earth metal hydroxides
20 such as lithium hydroxide, sodium hydroxide, potassium
hydroxide and calcium hydroxide, alkali metal and
alkaline earth metal oxides such as lithium oxide, sodium
oxide, calcium oxide and magnesium oxide, alkali metal
and alkaline earth metal hydrides such as lithium
25 hydride, sodium hydride, potassium hydride and calcium
hydride, alkali metal amides such as lithium amide,
sodium amide and potassium amide, alkali metal and
alkaline earth metal carbonates such as lithium carbonate
and calcium carbonate and also alkali metal hydrogen-
30 carbonates such as sodium hydrogencarbonate, and organo-
metallic compounds, in particular alkali metal alkyls
such as methyllithium, butyllithium and phenyllithium,
alkylmagnesium halides such as methylmagnesium chloride
and also alkali metal and alkaline earth metal alkoxides
35 such as sodium methoxide, sodium ethoxide, potassium
ethoxide, potassium tert-butoxide and dimethoxymagnesium,
additionally organic bases, eg. tertiary amines such as

trimethylamine, triethylamine, tri-isopropylethylamine and N-methylpiperidine, pyridine, substituted pyridines such as collidine, lutidine and 4-dimethylaminopyridine and also bicyclic amines.

5 Sodium hydrogencarbonate, sodium carbonate, triethylamine and pyridine are particularly preferred.

The bases are in general employed in equimolar amounts based on the compound II. However, they can also be used in an excess of from 5 mol% to 30 mol%,
10 preferably 5 mol% to 10 mol%, or - in the case of the use of tertiary amines - if appropriate as a solvent.

The starting materials are in general reacted with one another in equimolar amounts. It may be advantageous for the yield to employ II in an excess of from
15 1 mol% to 20 mol%, preferably 1 mol% to 10 mol%, based on III.

The starting substances of the formulae II and III needed for preparing the compounds I are known in the literature (Houben-Weyl, Methoden der org. Chemie
20 (Methods of Organic Chemistry), Vol. 10/1, pp. 1138-1148) or can be prepared according to the literature cited.

With respect to their use in fungicidal compositions, suitable compounds of the formula I are those in which the substituents have the following meanings:

25 R is C₂-C₁₂-alkyl such as ethyl and straight-chain or branched propyl, butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl and dodecyl, particularly straight-chain or branched C₃-C₁₀-alkyl such as propyl, 1-methylethyl, butyl, 1-methylpropyl,
30 2-methylpropyl, 1,1-dimethylethyl, n-pentyl, 1-methylbutyl, 2-methylbutyl, 3-methylbutyl, 1,2-dimethylpropyl, 1,1-dimethylpropyl, 2,2-dimethylpropyl, 1-ethylpropyl, n-hexyl, 1-methylpentyl, 2-methylpentyl, 3-methylpentyl,
35 4-methylpentyl, 1,2-dimethylbutyl, 1,3-dimethylbutyl, 1,3-dimethylbutyl, 2,3-dimethylbutyl, 1,1-dimethylbutyl, 2,2-dimethylbutyl, 3,3-dimethyl-

butyl, 1,1,2-trimethylpropyl, 1,2,2-trimethylpropyl,
 1-ethylbutyl, 2-ethylbutyl, 1-ethyl-3-methylpropyl,
 n-heptyl, 1-methylhexyl, 1-ethylpentyl, 2-ethyl-
 pentyl, 1-propylbutyl, octyl, 1-methylheptyl,
 5 2-methylheptyl, 1-ethylhexyl, 2-ethylhexyl,
 1-propylpentyl, 2-propylpentyl, nonyl, 1-methyl-
 octyl, 2-methyloctyl, 1-ethylheptyl, 2-ethylheptyl,
 1-propylhexyl, 2-propylhexyl, decyl, 1-methylnonyl,
 2-methylnonyl, 1-ethyloctyl, 2-ethyloctyl, 1-propyl-
 10 heptyl and 2-propylheptyl, in particular propyl,
 1-methylethyl, butyl, 1-methylbutyl, 2-methylbutyl,
 1,1-dimethylethyl, pentyl, 1-methylbutyl, hexyl,
 heptyl and 1-methylheptyl, where these groups can be
 partially or completely halogenated, ie. the
 15 hydrogens of these groups can be partially or com-
 pletely replaced by halogens such as fluorine,
 chlorine and bromine, in particular fluorine and
 chlorine, for example haloalkyl such as chloro-
 methyl, dichloromethyl, trichloromethyl, fluoro-
 20 methyl, difluoromethyl, trifluoromethyl, chloro-
 fluoromethyl, dichlorofluoromethyl, chlorodifluoro-
 methyl, 1-fluoroethyl, 2-fluoroethyl, 2,2-difluoro-
 ethyl, 2,2,2-trifluoroethyl, 2-chloro-2-fluoroethyl,
 2-chloro-2,2-difluoroethyl, 2,2-dichloro-2-fluoro-
 25 ethyl, 2,2,2-trichloroethyl and pentafluoroethyl;

C₂-C₁₂-alkoxy such as ethoxy and straight-chain or
 branched propoxy, butoxy, pentoxy, hexyloxy, heptyl-
 oxy, octyloxy, nonyloxy, decyloxy, undecyloxy and
 dodecyloxy, particularly straight-chain or branched
 30 C₂-C₁₀-alkoxy such as ethoxy, propoxy, 1-methyl-
 ethoxy, butoxy, 1-methylpropoxy, 2-methylpropoxy,
 1,1-dimethylethoxy, n-pentoxy, 1-methylbutoxy,
 2-methylbutoxy, 3-methylbutoxy, 1,2-dimethylpropoxy,
 1-ethylpropoxy, n-hexyloxy, 1-methylpentoxy,
 35 2-methylpentoxy, 3-methylpentoxy, 4-methylpentoxy,
 1,2-dimethylbutoxy, 1,3-dimethylbutoxy,

- 2,3-dimethylbutoxy, 1,2-dimethylbutoxy,
2,2-dimethylbutoxy, 3,3-dimethylbutoxy, 1,1,2-tri-
methylpropoxy, 1,2,2-trimethylpropoxy, 1-ethyl-
butoxy, 2-ethylbutoxy, 1-ethyl-2-methylpropoxy,
5 n-heptyloxy, 1-methylhexyloxy, 2-methylhexyloxy,
3-methylhexyloxy, 4-methylhexyloxy, 5-methylhexyl-
oxy, 1-ethylpentoxy, 2-ethylpentoxy, 1-propylbutoxy,
octyloxy, 1-methylheptyloxy, 2-methylheptyloxy,
1-ethylhexyloxy, 2-ethylhexyloxy, 1-propylpentoxy,
10 2-propylpentoxy, nonyloxy, 1-methyloctyloxy,
2-methyloctyloxy, 1-ethylheptyloxy, 2-ethylheptyl-
oxy, 1-propylhexyloxy, 2-propylhexyloxy, decyloxy,
1-methylnonyloxy, 2-methylnonyloxy, 1-ethyloctyloxy,
2-ethyloctyloxy, 1-propylheptyloxy and 2-propyl-
15 heptyloxy, in particular ethoxy, propoxy, 1-methyl-
ethoxy, butoxy, 1-methylpropoxy, 2-methylpropoxy,
1,1-dimethylethoxy, pentoxy, hexyloxy and 2-ethyl-
hexyloxy, where these groups can be partially or
completely halogenated, ie. the hydrogens of these
20 groups can be partially or completely replaced by
halogens such as fluorine, chlorine and bromine, in
particular fluorine and chlorine, for example halo-
alkoxy such as chloromethoxy, dichloromethoxy,
trichloromethoxy, fluoromethoxy, difluoromethoxy,
25 trifluoromethoxy, chlorofluoromethoxy, dichloro-
fluoromethoxy, chlorodifluoromethoxy, 1-fluoro-
ethoxy, 2-fluoroethoxy, 2,2-difluoroethoxy,
2,2,2-trifluoroethoxy, 2-chloro-2-fluoroethoxy,
2-chloro-2,2-difluoroethoxy, 2,2-dichloro-2-fluoro-
30 ethoxy, 2,2,2-trichloroethoxy and pentafluoroethoxy;
- C₃-C₁₂-alkenyl such as straight-chain or branched
propenyl, butenyl, pentenyl, hexenyl, heptenyl,
octenyl, nonenyl, decenyl, undecenyl and dodecenyl,
particularly straight-chain or branched
35 C₃-C₁₀-alkenyl such as 2-propenyl, 2-butenyl,
3-butenyl, 1-methyl-2-propenyl, 2-methyl-2-propenyl,

2-pentenyl, 3-pentenyl, 4-pentenyl, 1-methyl-
2-butenyl, 2-methyl-2-butenyl, 3-methyl-2-butenyl,
1-methyl-3-butenyl, 2-methyl-3-butenyl, 3-methyl-
3-butenyl, 1,1-dimethyl-2-propenyl, 1,2-dimethyl-
5 2-propenyl, 1-ethyl-2-propenyl, 2-hexenyl,
3-hexenyl, 4-hexenyl, 5-hexenyl, 1-methyl-
2-pentenyl, 2-methyl-2-pentenyl, 3-methyl-
2-pentenyl, 4-methyl-2-pentenyl, 1-methyl-
3-pentenyl, 2-methyl-3-pentenyl, 3-methyl-
10 3-pentenyl, 4-methyl-3-pentenyl, 1-methyl-
4-pentenyl, 2-methyl-4-pentenyl, 3-methyl-
4-pentenyl, 4-methyl-4-pentenyl, 1,1-dimethyl-
2-butenyl, 1,1-dimethyl-3-butenyl, 1,2-dimethyl-
2-butenyl, 1,2-dimethyl-3-butenyl, 1,3-dimethyl-
15 2-butenyl, 1,3-dimethyl-3-butenyl, 2,2-dimethyl-
3-butenyl, 2,3-dimethyl-2-butenyl, 2,3-dimethyl-
3-butenyl, 1-ethyl-2-butenyl, 1-ethyl-3-butenyl,
2-ethyl-2-butenyl, 2-ethyl-3-butenyl, 1,1,2-tri-
methyl-2-propenyl, 1-ethyl-1-methyl-2-propenyl,
20 1-ethyl-2-methyl-2-propenyl, 1-methyl-2-pentenyl,
2-methyl-2-pentenyl, 1-methyl-3-pentenyl, 2-methyl-
3-pentenyl, 1-methyl-2-hexenyl, 2-methyl-2-hexenyl,
1-methyl-3-hexenyl, 2-methyl-3-hexenyl, 1-ethyl-
2-pentenyl, 2-ethyl-2-pentenyl, 1-ethyl-3-pentenyl,
25 2-ethyl-3-pentenyl, 1-methyl-2-heptenyl, 2-methyl-
2-heptenyl, 1-methyl-3-heptenyl, 2-methyl-
3-heptenyl, 1-ethyl-2-hexenyl, 2-ethyl-2-hexenyl,
1-ethyl-3-hexenyl, 2-ethyl-3-hexenyl, 1-methyl-
2-octenyl, 2-methyl-2-octenyl, 1-methyl-3-octenyl,
30 2-methyl-3-octenyl, 1-ethyl-2-heptenyl, 2-ethyl-
2-heptenyl, 1-ethyl-3-heptenyl, 2-ethyl-3-heptenyl,
1-ethyl-2-octenyl, 2-ethyl-2-octenyl, 1-ethyl-
3-octenyl and 2-ethyl-3-octenyl, in particular
1-propenyl, 2-propenyl, 1-methylethenyl, 1-methyl-
35 2-propenyl, 2-methyl-2-propenyl, 1-ethyl-2-propenyl,
1-methyl-2-butenyl, 1-ethyl-2-butenyl, 1-(1-methyl-
ethyl)-2-butenyl, 1-butyl-2-butenyl, 1-methyl-

2-pentenyl and 1,4-dimethyl-2-pentenyl, where these groups can be partially or completely halogenated, ie. the hydrogens of these groups can be partially or completely replaced by halogens such as fluorine, chlorine and bromine, in particular fluorine and chlorine, in particular 3-chloro-2-propenyl and 2,3-dichloro-2-propenyl;

C_3 - C_{12} -alkenyloxy such as straight-chain or branched propenyloxy, butenyloxy, pentenyloxy, hexenyloxy, heptenyloxy, octenyloxy, nonenyloxy, decenyloxy, undecenyloxy and dodecenyloxy, particularly straight-chain or branched C_3 - C_{10} -alkenyloxy such as 2-propenyloxy, 2-butenyloxy, 3-butenyloxy, 1-methyl-2-propenyloxy, 2-methyl-2-propenyloxy, 2-pentenyl-oxy, 3-pentenyl-oxy, 4-pentenyl-oxy, 1-methyl-2-butenyloxy, 2-methyl-2-butenyloxy, 3-methyl-2-butenyloxy, 1-methyl-3-butenyloxy, 2-methyl-3-butenyloxy, 3-methyl-3-butenyloxy, 1,1-dimethyl-2-propenyloxy, 1,2-dimethyl-2-propenyloxy, 1-ethyl-2-propenyloxy, 2-hexenyloxy, 3-hexenyloxy, 4-hexenyloxy, 5-hexenyloxy, 1-methyl-2-pentenyl-oxy, 2-methyl-2-pentenyl-oxy, 3-methyl-2-pentenyl-oxy, 4-methyl-2-pentenyl-oxy, 1-methyl-3-pentenyl-oxy, 2-methyl-3-pentenyl-oxy, 3-methyl-3-pentenyl-oxy, 4-methyl-3-pentenyl-oxy, 1-methyl-4-pentenyl-oxy, 2-methyl-4-pentenyl-oxy, 3-methyl-4-pentenyl-oxy, 4-methyl-4-pentenyl-oxy, 1,1-dimethyl-2-butenyloxy, 1,1-dimethyl-3-butenyloxy, 1,2-dimethyl-2-butenyloxy, 1,2-dimethyl-3-butenyloxy, 1,3-dimethyl-2-butenyloxy, 1,3-dimethyl-3-butenyl-oxy, 2,2-dimethyl-3-butenyloxy, 2,3-dimethyl-2-butenyloxy, 2,3-dimethyl-3-butenyloxy, 1-ethyl-2-butenyloxy, 1-ethyl-3-butenyloxy, 2-ethyl-2-butenyloxy, 2-ethyl-3-butenyloxy, 1,1,2-trimethyl-2-propenyloxy, 1-ethyl-1-methyl-2-propenyloxy, 1-ethyl-2-methyl-2-propenyloxy, 1-methyl-2-pentenyl-

oxy, 2-methyl-2-pentenyl, 1-methyl-3-pentenyl, 2-methyl-3-pentenyl, 1-methyl-2-hexenyl, 2-methyl-2-hexenyl, 1-methyl-3-hexenyl, 2-methyl-3-hexenyl, 1-ethyl-2-pentenyl, 2-ethyl-2-pentenyl, 1-ethyl-3-pentenyl, 2-ethyl-3-pentenyl, 1-methyl-2-heptenyl, 2-methyl-2-heptenyl, 1-methyl-3-heptenyl, 2-methyl-3-heptenyl, 1-ethyl-2-hexenyl, 2-ethyl-2-hexenyl, 1-ethyl-3-hexenyl, 2-ethyl-3-hexenyl, 1-methyl-2-octenyl, 2-methyl-2-octenyl, 1-methyl-3-octenyl, 2-methyl-3-octenyl, 1-ethyl-2-heptenyl, 2-ethyl-2-heptenyl, 1-ethyl-3-heptenyl, 2-ethyl-3-heptenyl, 1-ethyl-2-octenyl, 2-ethyl-2-octenyl, 1-ethyl-3-octenyl and 2-ethyl-3-octenyl, in particular 2-propenyl, 1-methyl-2-propenyl, 2-methyl-2-propenyl, 2-pentenyl, 3-pentenyl, 1-methyl-2-butenyl and 1-methyl-2-pentenyl, where these groups can be partially or completely halogenated, ie. the hydrogens of these groups can be partially or completely replaced by halogens such as fluorine, chlorine and bromine, in particular fluorine and chlorine, in particular 3-chloro-2-propenyl, 2,3-dichloro-2-propenyl and 2,3,3-trichloro-2-propenyl;

C₂-C₆-alkynyl such as 2-propynyl, 2-butyne, 3-butyne, 1-methyl-2-propynyl, 2-pentynyl, 3-pentynyl, 4-pentynyl, 1-methyl-3-butyne, 2-methyl-3-butyne, 1-methyl-2-butyne, 1,1-dimethyl-2-propynyl, 1-ethyl-2-propynyl, 2-hexynyl, 3-hexynyl, 4-alkynyl, 5-hexynyl, 1-methyl-2-pentynyl, 1-methyl-3-pentynyl, 1-methyl-4-pentynyl, 2-methyl-3-pentynyl, 2-methyl-4-pentynyl, 3-methyl-4-pentynyl, 4-methyl-2-pentynyl, 1,2-dimethyl-2-butyne, 1,1-dimethyl-3-butyne, 1,2-dimethyl-3-butyne, 2,2-dimethyl-3-

butynyl, 1-ethyl-2-butynyl, 1-ethyl-3-butynyl, 2-ethyl-3-butynyl and 1-ethyl-1-methyl-2-propynyl, in particular 2-propynyl, 2-butynyl and 3-butynyl, where these groups can be partially or completely
 5 halogenated, ie. the hydrogens of these groups can be partially or completely replaced by halogens such as fluorine, chlorine and bromine, in particular fluorine and chlorine, for example 3-chloro-2-propynyl, 3-chloro-2-butynyl and 4-chloro-3-butynyl;

10 C₃-C₆-alkynyloxy such as 2-propynyloxy, 2-butynyloxy, 3-butynyloxy, 1-methyl-2-propynyloxy, 2-pentynyloxy, 3-pentynyloxy, 3-pentynyloxy, 4-pentynyloxy, 1-methyl-3-butynyloxy, 2-methyl-3-butynyloxy, 1-methyl-2-butynyloxy, 1,1-dimethyl-2-propionyloxy, 1-ethyl-2-propynyloxy, 2-hexynyloxy, 3-hexynyloxy, 4-alkynyloxy, 5-hexynyloxy, 1-methyl-2-pentynyloxy, 1-methyl-3-pentynyloxy, 1-methyl-4-pentynyloxy, 2-methyl-3-pentynyloxy, 2-methyl-4-pentynyloxy, 3-methyl-4-pentynyloxy, 4-methyl-3-pentynyloxy, 1,1-dimethyl-2-butynyloxy, 1,1-dimethyl-3-butynyloxy, 1,2-dimethyl-3-butynyloxy, 2,2-dimethyl-3-butynyloxy, 1-ethyl-2-butynyloxy, 1-ethyl-3-butynyloxy, 2-ethyl-3-butynyloxy and 1-ethyl-1-methyl-2-propynyloxy, preferably 2-propynyloxy, 2-butynyloxy, 1-methyl-2-propynyloxy and 1-methyl-2-butynyloxy, 2-propynyloxy, 2-butynyloxy, 3-butynyloxy and 1-methyl-2-propynyloxy, where these groups can be
 25 partially or completely halogenated, ie. the hydrogens of these groups can be partially or completely replaced by halogens such as fluorine, chlorine and bromine, in particular fluorine and chlorine, for example 3-chloro-2-propynyloxy, 3-chloro-2-butynyloxy and 4-chloro-3-butynyloxy;

35 C₃-C₇-cycloalkyl such as cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and cycloheptyl, where these

rings can carry one to 3 C₁-C₄-alkyls such as methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl and 1,1-dimethylethyl;

5 C₄-C₇-cycloalkenyl such as cyclobutenyl, cyclopentenyl, cyclohexenyl and cycloheptenyl, where these rings can carry one to three C₁-C₄-alkyls such as methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl and 1,1-dimethylethyl;

10 C₃-C₇-cycloalkoxy such as cyclopropoxy, cyclobutoxy, cyclopentoxy, cyclohexyloxy and cycloheptyloxy, where these rings can carry one to 3 C₁-C₄-alkyls such as methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl and 1,1-dimethylethyl;

15 or C₄-C₇-cycloalkenyloxy such as 1-cyclobutenyloxy, 2-cyclobutenyloxy, 1-cyclopentenyl, 2-cyclopentenyl, 3-cyclopentenyl, 1-cyclohexenyloxy, 2-cyclohexenyloxy, 3-cyclohexenyloxy, 1-cycloheptenyloxy, 2-cycloheptenyloxy, 3-cycloheptenyloxy and 4-cycloheptenyloxy, where these rings can carry one to 3 C₁-C₄-alkyls such as methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl and 1,1-dimethylethyl;

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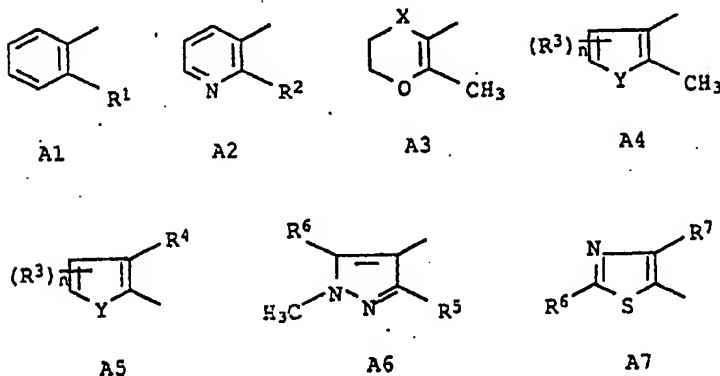
25 phenyl, which can carry one to five halogens such as fluorine, chlorine, bromine and iodine, in particular fluorine, chlorine and bromine, and/or one to three of the following radicals:

- C₁-C₄-alkyl as mentioned above;
- C₁-C₄-haloalkyl as mentioned above;
- 30 - C₁-C₄-alkoxy as mentioned above;
- C₁-C₄-haloalkoxy as mentioned above;
- C₁-C₄-alkylthio such as methylthio, ethylthio,

propylthio, 1-methylethylthio, butylthio, 1-methylpropylthio, 2-methylpropylthio and 1,1-dimethylethylthio;

- 5 - or C₁-C₄-haloalkylthio, particularly C₁-C₂-haloalkylthio such as chloromethylthio, dichloromethylthio, trichloromethylthio, fluoromethylthio, difluoromethylthio, trifluoromethylthio, chlorofluoromethylthio, dichlorofluoromethylthio, chlorodifluoromethylthio, 1-fluoroethylthio, 2-fluoroethylthio, 2,2-difluoroethylthio, 2,2,2-trifluoroethylthio, 2-chloro-2-fluoroethylthio, 2-chloro-2,2-difluoroethylthio, 2,2-dichloro-2-fluoroethylthio, 2,2,2-trichloroethylthio and pentafluoroethylthio.
- 10

- 15 A is a cyclic radical from the group consisting of the formulae A1 to A7:



where the substituents have the following meanings:

X is -CH₂-, -S-, -SO- or -SO₂-;

Y is -O- or -S-;

- 20 R¹, R², R⁴, R⁵ and R⁷ independently of one another are halogen such as fluorine, chlorine and bromine, C₁-C₄-alkyl as mentioned above, or C₁-C₄-haloalkyl as mentioned above;

- 25 R³ and R⁶ independently of one another are hydrogen, halogen such as fluorine, chlorine and bromine or

C₁-C₄-alkyl as mentioned above;

n is 1 or 2, where the radicals R³ can be different if the value of n is 2.

- With respect to the biological action,
- 5 particularly preferred compounds of the formula I are those in which R has the abovementioned meanings and A is a cyclic radical from the group consisting of the formulae A1 to A7, where X and Y have the abovementioned meaning and the substituents are the following radicals:
- 10 R¹ is halogen such as fluorine, chlorine and bromine, methyl or C₁-haloalkyl such as chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl and chlorodifluoromethyl;
- 15 R² is halogen such as fluorine, chlorine and bromine or C₁-haloalkyl such as chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl and chlorodifluoromethyl;
- 20 R³ is hydrogen or methyl;
n is 1 or 2, where the radicals R³ can be different if the value of n is 2;
- R⁴ is halogen such as fluorine, chlorine and bromine or methyl;
- 25 R⁵ is methyl or C₁-haloalkyl such as chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl and chlorodifluoromethyl;
- 30 R⁶ is hydrogen, halogen such as fluorine, chlorine and bromine or methyl;
- R⁷ is halogen such as fluorine, chlorine and bromine, methyl or C₁-haloalkyl such as chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, chlorofluoromethyl, dichlorofluoromethyl and chlorodifluoromethyl.
- 35

In particular, those compounds of the formula I are preferred in which R has the abovementioned meaning

and A is a cyclic radical from the group consisting of the formulae A1 to A7, where X and Y have the above-mentioned meaning and the substituents are the following groups:

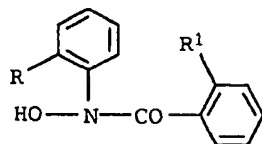
- 5 R¹ is chlorine, bromine, iodine, methyl or trifluoromethyl;
R² is chlorine or trifluoromethyl;
R³ is hydrogen or methyl;
n is 1 or 2, where the radicals R³ can be different if
10 the value of n is 2;
R⁴ is chlorine or methyl;
R⁵ is methyl, difluoromethyl or trifluoromethyl;
R⁶ is hydrogen, chlorine or methyl;
R⁷ is chlorine, methyl or trifluoromethyl.
15 Particularly preferred compounds of the formula I
are summarized in the following Tables A to G.

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Table A

5



I.1

10

R¹	R
CF₃	i-C₃H₇
CF₃	n-C₃H₇
15 CF₃	n-C₄H₉
CF₃	sec.-C₄H₉
CF₃	i-C₄H₉
CF₃	tert.-C₄H₉
20 CF₃	n-C₅H₁₁
CF₃	sec-C₅H₁₁
CF₃	n-C₆H₁₃
CF₃	n-C₇H₁₅
CF₃	sec.-C₇H₁₅
25 CF₃	1-methylvinyl
CF₃	2-methylvinyl
CF₃	allyl
CF₃	2-methylallyl
30 CF₃	2-ethylallyl
CF₃	1-methylallyl
CF₃	1-ethylallyl
CF₃	1-methyl-2-butenyl
35 CF₃	1-ethyl-2-butenyl
CF₃	1-isopropyl-2-butenyl
CF₃	1-n-butyl-2-butenyl
CF₃	1-methyl-2-pentenyl
40 CF₃	1,4-dimethyl-2-pentenyl
CF₃	propargyl
CF₃	2-butyryl
CF₃	3-butyryl
CF₃	ethoxy
45 CF₃	propoxy
CF₃	1-methylethoxy

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	R ¹	R
	CF ₃	n-butoxy
5	CF ₃	1-methylpropoxy
	CF ₃	2-methylpropoxy
	CF ₃	1,1-dimethylethoxy
	CF ₃	n-pentyloxy
	CF ₃	n-hexyloxy
10	CF ₃	2-ethylhexyloxy
	CF ₃	2-propenyloxy
	CF ₃	2-butenyloxy
	CF ₃	2-methyl-2-propenyloxy
15	CF ₃	2-pentyloxy
	CF ₃	3-pentyloxy
	CF ₃	3-chloro-2-propenyloxy
	CF ₃	2,3-dichloro-2-propenyloxy
20	CF ₃	2,3,3-trichloropropenyloxy
	CF ₃	2-propynyloxy
	CF ₃	2-butyloxy
	CF ₃	3-butyloxy
	CF ₃	1-methyl-2-propynyloxy
25	CF ₃	cyclopropyl
	CF ₃	cyclobutyl
	CF ₃	cyclopentyl
	CF ₃	cyclohexyl
30	CF ₃	2-cyclopentenyl
	CF ₃	1-cyclopentenyl
	CF ₃	2-cyclohexenyl
	CF ₃	1-cyclohexenyl
35	CF ₃	cyclopentyloxy
	CF ₃	cyclohexyloxy
	CF ₃	2-cyclopentenyl
	CF ₃	2-cyclohexenyl
40	CF ₃	phenyl
	Cl	i-C ₃ H ₇
	Cl	n-C ₃ H ₇
	Cl	n-C ₄ H ₉
	Cl	sec.-C ₄ H ₉
45	Cl	i-C ₄ H ₉
	Cl	tert.-C ₄ H ₉

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	R ¹	R
	Cl	n-C ₅ H ₁₁
	Cl	sec.-C ₅ H ₁₁
5	Cl	n-C ₆ H ₁₃
	Cl	n-C ₇ H ₁₅
	Cl	sec.-C ₇ H ₁₅
	Cl	1-methylvinyl
10	Cl	2-methylvinyl
	Cl	allyl
	Cl	2-methylvinyl
	Cl	2-ethylallyl
15	Cl	1-methylallyl
	Cl	1-ethylallyl
	Cl	1-methyl-2-butenyl
	Cl	1-ethyl-2-butenyl
20	Cl	1-isopropyl-2-butenyl
	Cl	1-n-butyl-2-butenyl
	Cl	methyl-2-pentenyl
	Cl	1,4-dimethyl-2-pentenyl
	Cl	propargyl
25	Cl	2-butylyl
	Cl	3-butylyl
	Cl	ethoxy
	Cl	propoxy
30	Cl	1-methylethoxy
	Cl	n-butoxy
	Cl	1-methylpropoxy
	Cl	2-methylpropoxy
35	Cl	1,1-dimethylethoxy
	Cl	n-pentyloxy
	Cl	n-hexyloxy
	Cl	2-ethylhexyloxy
	Cl	2-propenyloxy
40	Cl	2-butenyloxy
	Cl	2-methyl-2-propenyloxy
	Cl	2-pentenylloxy
	Cl	3-pentenylloxy
45	Cl	3-chloro-2-propenyloxy
	Cl	2,3-dichloro-2-propenyloxy

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	R ¹	R
	Cl	2,3,3-trichloropropenyloxy
5	Cl	2-propynyloxy
	Cl	2-butyloxy
	Cl	3-butyloxy
	Cl	1-methyl-2-propynyloxy
	Cl	cyclopropyl
10	Cl	cyclobutyl
	Cl	cyclopentyl
	Cl	cyclohexyl
	Cl	2-cyclopentenyl
15	Cl	1-cyclopentenyl
	Cl	2-cyclohexenyl
	Cl	1-cyclohexenyl
	Cl	cyclopentyloxy
20	Cl	cyclohexyloxy
	Cl	2-cyclopentenylloxy
	Cl	2-cyclohexenylloxy
	Cl	phenyl

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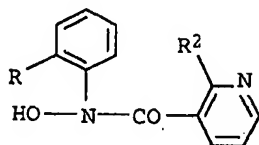
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Table B

5



I.2

10	R ²	R
	Cl	i-C ₃ H ₇
	Cl	n-C ₃ H ₇
	Cl	n-C ₄ H ₉
15	Cl	sec.-C ₄ H ₉
	Cl	i-C ₄ H ₉
	Cl	tert.-C ₄ H ₉
	Cl	n-C ₅ H ₁₁
20	Cl	sec.-C ₅ H ₁₁
	Cl	n-C ₆ H ₁₃
	Cl	n-C ₇ H ₁₅
	Cl	sec.-C ₇ H ₁₅
25	Cl	1-methylvinyl
	Cl	2-methylvinyl
	Cl	allyl
	Cl	2-methylallyl
	Cl	2-ethylallyl
30	Cl	1-methylallyl
	Cl	1-ethylallyl
	Cl	1-methyl-2-butenyl
	Cl	1-ethyl-2-butenyl
35	Cl	1-isopropyl-2-butenyl
	Cl	1-n-butyl-2-butenyl
	Cl	1-methyl-2-pentenyl
	Cl	1,4-dimethyl-2-pentenyl
40	Cl	propargyl
	Cl	2-butyryl
	Cl	3-butyryl
	Cl	ethoxy
	Cl	propoxy
45	Cl	1-methylethoxy
	Cl	n-butoxy

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	R ²	R
	Cl	1-methylpropoxy
5	Cl	2-methylpropoxy
	Cl	1,1-dimethylethoxy
	Cl	n-pentyloxy
	Cl	n-hexyloxy
10	Cl	2-ethylhexyloxy
	Cl	2-propenyloxy
	Cl	2-butenyloxy
	Cl	2-methyl-2-propenyloxy
	Cl	2-pentenyloxy
15	Cl	3-pentenyloxy
	Cl	3-chloro-2-propenyloxy
	Cl	2,3-dichloro-2-propenyloxy
	Cl	2,3,3-trichloropropenyloxy
20	Cl	2-propynyloxy
	Cl	2-butyloxy
	Cl	3-butyloxy
	Cl	1-methyl-2-propynyloxy
25	Cl	cyclopropyl
	Cl	cyclobutyl
	Cl	cyclopentyl
	Cl	cyclohexyl
30	Cl	2-cyclopentenyl
	Cl	1-cyclopentenyl
	Cl	2-cyclohexenyl
	Cl	1-cyclohexenyl
	Cl	cyclopentyloxy
35	Cl	cyclohexyloxy
	Cl	2-cyclopentenyloxy
	Cl	2-cyclohexenyloxy
	Cl	i-C ₃ H ₇
40	Cl	n-C ₃ H ₇
	Cl	n-C ₄ H ₉
	Cl	sec.-C ₄ H ₉
	Cl	i-C ₄ H ₉
	Cl	tert.-C ₄ H ₉
45	Cl	n-C ₅ H ₁₁
	Cl	sec.-C ₅ H ₁₁

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R ²	R
Cl	n-C ₆ H ₁₃
Cl	n-C ₇ H ₁₅
5 Cl	sec.-C ₇ H ₁₅
Cl	ethoxy
Cl	propoxy
Cl	1-methylethoxy
10 Cl	n-butoxy
Cl	1-methylpropoxy
Cl	2-methylpropoxy
Cl	1,1-dimethylethoxy
15 Cl	n-pentyloxy
Cl	n-hexyloxy
Cl	cyclopentyl
Cl	phenyl

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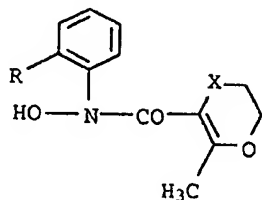
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Table C

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I.3

10

X	R
CH ₂	i-C ₃ H ₇
CH ₂	n-C ₃ H ₇
15	CH ₂
CH ₂	n-C ₄ H ₉
CH ₂	sec.-C ₄ H ₉
CH ₂	i-C ₄ H ₉
20	CH ₂
CH ₂	tert.-C ₄ H ₉
CH ₂	n-C ₅ H ₁₁
CH ₂	sec.-C ₅ H ₁₁
CH ₂	n-C ₆ H ₁₃
CH ₂	n-C ₇ H ₁₅
25	CH ₂
CH ₂	sec.-C ₇ H ₁₅
CH ₂	1-methylvinyl
CH ₂	2-methylvinyl
CH ₂	allyl
30	CH ₂
CH ₂	2-methylallyl
CH ₂	2-ethylallyl
CH ₂	1-methylallyl
CH ₂	1-ethylallyl
35	CH ₂
CH ₂	1-methyl-2-butenyl
CH ₂	1-ethyl-2-butenyl
CH ₂	1-isopropyl-2-butenyl
CH ₂	1-n-butyl-2-butenyl
40	CH ₂
CH ₂	1-methyl-2-pentenyl
CH ₂	1,4-dimethyl-2-pentenyl
CH ₂	propargyl
CH ₂	2-butyryl
CH ₂	3-butyryl
45	CH ₂
CH ₂	ethoxy
CH ₂	propoxy

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	X	R
	CH ₂	1-methylethoxy
5	CH ₂	n-butoxy
	CH ₂	1-methylpropoxy
	CH ₂	2-methylpropoxy
	CH ₂	1,1-dimethylethoxy
	CH ₂	n-pentyloxy
10	CH ₂	n-hexyloxy
	CH ₂	2-ethylhexyloxy
	CH ₂	2-propenyloxy
	CH ₂	2-butenyloxy
15	CH ₂	2-methyl-2-propenyloxy
	CH ₂	2-pentyloxy
	CH ₂	3-pentyloxy
	CH ₂	3-chloro-2-propenyloxy
20	CH ₂	2,3-dichloro-2-propenyloxy
	CH ₂	2,3,3-trichloropropenyloxy
	CH ₂	2-propynyloxy
	CH ₂	2-butyloxy
	CH ₂	3-butyloxy
25	CH ₂	1-methyl-2-propynyloxy
	CH ₂	cyclopropyl
	CH ₂	cyclobutyl
	CH ₂	cyclopentyl
30	CH ₂	cyclohexyl
	CH ₂	2-cyclopentenyl
	CH ₂	1-cyclopentenyl
	CH ₂	2-cyclohexenyl
35	CH ₂	1-cyclohexenyl
	CH ₂	cyclopentyloxy
	CH ₂	cyclohexyloxy
	CH ₂	2-cyclopentenyl
40	CH ₂	2-cyclohexenyl
	S	i-C ₃ H ₇
	S	n-C ₃ H ₇
	S	n-C ₄ H ₉
	S	sec.-C ₄ H ₉
45	S	i-C ₄ H ₉
	S	tert.-C ₄ H ₉

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	X	R
	S	n-C ₅ H ₁₁
5	S	sec.-C ₅ H ₁₁
	S	n-C ₆ H ₁₃
	S	n-C ₇ H ₁₅
	S	sec.-C ₇ H ₁₅
	S	ethoxy
10	S	propoxy
	S	1-methylethoxy
	S	n-butoxy
	S	1-methylpropoxy
15	S	2-methylpropoxy
	S	1,1-dimethylethoxy
	S	n-pentyloxy
	S	n-hexyloxy
20	S	cyclopentyl
	S	phenyl

25

30

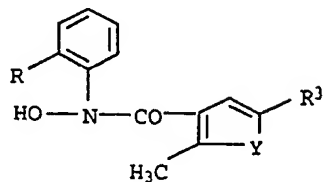
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Table D

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I.4

10

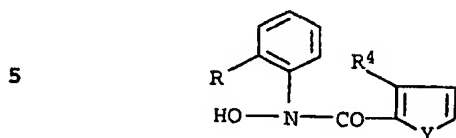
R ³	R	Y
H	i-C ₃ H ₇	O
H	n-C ₃ H ₇	O
H	n-C ₄ H ₉	O
H	sec.-C ₄ H ₉	O
H	i-C ₄ H ₉	O
H	tert.-C ₄ H ₉	O
H	n-C ₅ H ₁₁	O
H	sec.-C ₅ H ₁₁	O
H	n-C ₆ H ₁₃	O
H	n-C ₇ H ₁₅	O
H	sec.-C ₇ H ₁₅	O
H	ethoxy	O
H	propoxy	O
H	1-methylethoxy	O
H	n-butoxy	O
H	1-methylpropoxy	O
H	2-methylpropoxy	O
H	1,1-dimethylethoxy	O
H	n-pentyloxy	O
H	n-hexyloxy	O
H	cyclopentyl	O
H	cyclohexyl	O
H	2-cyclopentenyl	O
H	1-cyclopentenyl	O
H	2-cyclohexenyl	O
H	1-cyclohexenyl	O
H	cyclopentyloxy	O
H	cyclohexyloxy	O
H	2-cyclopentenylloxy	O

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R ³	R	Y
H	2-cyclohexenyloxy	O
CH ₃	i-C ₃ H ₇	O
CH ₃	n-C ₃ H ₇	O
CH ₃	n-C ₄ H ₉	O
CH ₃	sec.-C ₄ H ₉	O
CH ₃	i-C ₄ H ₉	O
CH ₃	tert.-C ₄ H ₉	O
CH ₃	n-C ₅ H ₁₁	O
CH ₃	sec.-C ₅ H ₁₁	O
CH ₃	n-C ₆ H ₁₃	O
CH ₃	n-C ₇ H ₁₅	O
CH ₃	sec.-C ₇ H ₁₅	O
CH ₃	ethoxy	O
CH ₃	propoxy	O
CH ₃	1-methylethoxy	O
CH ₃	n-butoxy	O
CH ₃	1-methylpropoxy	O
CH ₃	2-methylpropoxy	O
CH ₃	1,1-dimethylethoxy	O
CH ₃	n-pentyloxy	O
CH ₃	n-hexyloxy	O
CH ₃	cyclopentyl	O
CH ₃	phenyl	O

Table E



I.5

10	R ⁴	R	Y
	CH ₃	i-C ₃ H ₇	O
	CH ₃	n-C ₃ H ₇	O
	CH ₃	n-C ₄ H ₉	O
15	CH ₃	sec.-C ₄ H ₉	O
	CH ₃	i-C ₄ H ₉	O
	CH ₃	tert.-C ₄ H ₉	O
	CH ₃	n-C ₅ H ₁₁	O
20	CH ₃	sec.-C ₅ H ₁₁	O
	CH ₃	n-C ₆ H ₁₃	O
	CH ₃	n-C ₇ H ₁₅	O
	CH ₃	sec.-C ₇ H ₁₅	O
25	CH ₃	ethoxy	O
	CH ₃	propoxy	O
	CH ₃	1-methylethoxy	O
	CH ₃	n-butoxy	O
	CH ₃	1-methylpropoxy	O
30	CH ₃	2-methylpropoxy	O
	CH ₃	1,1-dimethylethoxy	O
	CH ₃	n-pentyloxy	O
	CH ₃	n-hexyloxy	O
35	CH ₃	cyclopentyl	O
	CH ₃	cyclopentenyl	O
	CH ₃	i-C ₃ H ₇	S
	CH ₃	n-C ₃ H ₇	S
40	CH ₃	n-C ₄ H ₉	S
	CH ₃	sec.-C ₄ H ₉	S
	CH ₃	i-C ₄ H ₉	S
	CH ₃	tert.-C ₄ H ₉	S
	CH ₃	n-C ₅ H ₁₁	S
45	CH ₃	sec.-C ₅ H ₁₁	S
	CH ₃	n-C ₆ H ₁₃	S

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	R ⁴	R	Y
	CH ₃	n-C ₇ H ₁₅	S
	CH ₃	sec.-C ₇ H ₁₅	S
5	CH ₃	ethoxy	S
	CH ₃	propoxy	S
	CH ₃	1-methylethoxy	S
	CH ₃	n-butoxy	S
10	CH ₃	1-methylpropoxy	S
	CH ₃	2-methylpropoxy	S
	CH ₃	1,1-dimethylethoxy	S
	CH ₃	n-pentyloxy	S
15	CH ₃	n-hexyloxy	S
	CH ₃	cyclopentyl	S
	CH ₃	cyclopentenyl	S

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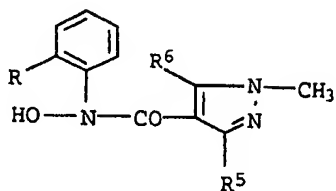
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Table F

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I.6

10

R ⁵	R ⁶	R
CH ₃	H	1-C ₃ H ₇
CH ₃	H	n-C ₃ H ₇
CH ₃	H	n-C ₄ H ₉
CH ₃	H	sec.-C ₄ H ₉
CH ₃	H	1-C ₄ H ₉
CH ₃	H	tert.-C ₄ H ₉
CH ₃	H	n-C ₅ H ₁₁
CH ₃	H	sec.-C ₅ H ₁₁
CH ₃	H	n-C ₆ H ₁₃
CH ₃	H	n-C ₇ H ₁₅
CH ₃	H	sec.-C ₇ H ₁₅
CH ₃	H	1-methylvinyl
CH ₃	H	2-methylvinyl
CH ₃	H	allyl
CH ₃	H	2-methylallyl
CH ₃	H	2-ethylallyl
CH ₃	H	1-methylallyl
CH ₃	H	1-ethylallyl
CH ₃	H	1-methyl-2-butenyl
CH ₃	H	1-ethyl-2-butenyl
CH ₃	H	1-isopropyl-2-butenyl
CH ₃	H	1-n-butyl-2-butenyl
CH ₃	H	1-methyl-2-pentenyl
CH ₃	H	1,4-dimethyl-2-pentenyl
CH ₃	H	propargyl
CH ₃	H	2-butyryl
CH ₃	H	3-butyryl
CH ₃	H	ethoxy
CH ₃	H	propoxy

45

	R ⁵	R ⁶	R
	CH ₃	H	1-methylethoxy
	CH ₃	H	n-butoxy
5	CH ₃	H	1-methylpropoxy
	CH ₃	H	2-methylpropoxy
	CH ₃	H	1,1-dimethylethoxy
	CH ₃	H	n-pentyloxy
10	CH ₃	H	n-hexyloxy
	CH ₃	H	2-ethylhexyloxy
	CH ₃	H	2-propenyloxy
	CH ₃	H	2-butenyloxy
15	CH ₃	H	2-methyl-2-propenyloxy
	CH ₃	H	2-pentyloxy
	CH ₃	H	3-pentyloxy
	CH ₃	H	3-chloro-2-propenyloxy
20	CH ₃	H	2,3-dichloro-2-propenyloxy
	CH ₃	H	2,3,3-trichloropropenyloxy
	CH ₃	H	2-propynyloxy
	CH ₃	H	2-butyloxy
	CH ₃	H	3-butyloxy
25	CH ₃	H	1-methyl-2-propynyloxy
	CH ₃	H	cyclopropyl
	CH ₃	H	cyclobutyl
	CH ₃	H	cyclopentyl
30	CH ₃	H	cyclohexyl
	CH ₃	H	2-cyclopentenyl
	CH ₃	H	1-cyclopentenyl
	CH ₃	H	2-cyclohexenyl
35	CH ₃	H	1-cyclohexenyl
	CH ₃	H	cyclopentyloxy
	CH ₃	H	cyclohexyloxy
	CH ₃	H	2-cyclopentyloxy
40	CH ₃	H	2-cyclohexenyloxy
	CF ₃	H	i-C ₃ H ₇
	CF ₃	H	n-C ₃ H ₇
	CF ₃	H	n-C ₄ H ₉
	CF ₃	H	sec.-C ₄ H ₉
45	CF ₃	H	i-C ₄ H ₉
	CF ₃	H	tert.-C ₄ H ₉

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	R ⁵	R ⁶	R
	CF ₃	H	n-C ₅ H ₁₁
5	CF ₃	H	sec.-C ₅ H ₁₁
	CF ₃	H	n-C ₆ H ₁₃
	CF ₃	H	n-C ₇ H ₁₅
	CF ₃	H	sec.-C ₇ H ₁₅
	CF ₃	H	ethoxy
10	CF ₃	H	propoxy
	CF ₃	H	1-methylethoxy
	CF ₃	H	n-butoxy
	CF ₃	H	1-methylpropoxy
15	CF ₃	H	2-methylpropoxy
	CF ₃	H	1,1-dimethylethoxy
	CF ₃	H	n-pentyloxy
	CF ₃	H	n-hexyloxy
20	CF ₃	H	cyclopentyl
	CF ₃	H	cyclopentenyl
	CF ₃	H	phenyl

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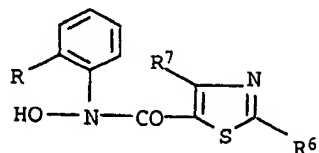
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Table G

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I.7

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	R ⁷	R ⁶	R
10	CF ₃	CH ₃	i-C ₃ H ₇
	CF ₃	CH ₃	n-C ₃ H ₇
15	CF ₃	CH ₃	n-C ₄ H ₉
	CF ₃	CH ₃	sec.-C ₄ H ₉
	CF ₃	CH ₃	i-C ₄ H ₉
	CF ₃	CH ₃	tert.-C ₄ H ₉
20	CF ₃	CH ₃	n-C ₅ H ₁₁
	CF ₃	CH ₃	sec.-C ₅ H ₁₁
	CF ₃	CH ₃	n-C ₆ H ₁₃
	CF ₃	CH ₃	n-C ₇ H ₁₅
25	CF ₃	CH ₃	sec.-C ₇ H ₁₅
	CF ₃	CH ₃	1-methylvinyl
	CF ₃	CH ₃	2-methylvinyl
	CF ₃	CH ₃	allyl
	CF ₃	CH ₃	2-methylallyl
30	CF ₃	CH ₃	2-ethylallyl
	CF ₃	CH ₃	1-methylallyl
	CF ₃	CH ₃	1-ethylallyl
	CF ₃	CH ₃	1-methyl-2-butenyl
35	CF ₃	CH ₃	1-ethyl-2-butenyl
	CF ₃	CH ₃	1-isopropyl-2-butenyl
	CF ₃	CH ₃	1-n-butyl-2-butenyl
	CF ₃	CH ₃	1-methyl-2-pentenyl
40	CF ₃	CH ₃	1,4-dimethyl-2-pentenyl
	CF ₃	CH ₃	propargyl
	CF ₃	CH ₃	2-butyryl
	CF ₃	CH ₃	3-butyryl
	CF ₃	CH ₃	ethoxy
45	CF ₃	CH ₃	propoxy
	CF ₃	CH ₃	1-methylethoxy

	R ⁷	R ⁶	R
	CF ₃	CH ₃	n-butoxy
5	CF ₃	CH ₃	1-methylpropoxy
	CF ₃	CH ₃	2-methylpropoxy
	CF ₃	CH ₃	1,1-dimethylethoxy
	CF ₃	CH ₃	n-pentyloxy
	CF ₃	CH ₃	n-hexyloxy
10	CF ₃	CH ₃	2-ethylhexyloxy
	CF ₃	CH ₃	2-propenyloxy
	CF ₃	CH ₃	2-butenyloxy
	CF ₃	CH ₃	2-methyl-2-propenyloxy
15	CF ₃	CH ₃	2-pentyloxy
	CF ₃	CH ₃	3-pentyloxy
	CF ₃	CH ₃	3-chloro-2-propenyloxy
	CF ₃	CH ₃	2,3-dichloro-2-propenyloxy
20	CF ₃	CH ₃	2,3,3-trichloropropenyloxy
	CF ₃	CH ₃	2-propynyloxy
	CF ₃	CH ₃	2-butyloxy
	CF ₃	CH ₃	3-butyloxy
25	CF ₃	CH ₃	1-methyl-2-propynyloxy
	CF ₃	CH ₃	cyclopropyl
	CF ₃	CH ₃	cyclobutyl
	CF ₃	CH ₃	cyclopentyl
	CF ₃	CH ₃	cyclohexyl
30	CF ₃	CH ₃	2-cyclopentenyl
	CF ₃	CH ₃	1-cyclopentenyl
	CF ₃	CH ₃	2-cyclohexenyl
	CF ₃	CH ₃	1-cyclohexenyl
35	CF ₃	CH ₃	cyclopentyloxy
	CF ₃	CH ₃	cyclohexyloxy
	CF ₃	CH ₃	2-cyclopentenyl
	CF ₃	CH ₃	2-cyclohexenyl
40	CH ₃	CH ₃	i-C ₃ H ₇
	CH ₃	CH ₃	n-C ₃ H ₇
	CH ₃	CH ₃	n-C ₄ H ₉
	CH ₃	CH ₃	sec.-C ₄ H ₉
	CH ₃	CH ₃	i-C ₄ H ₉
45	CH ₃	CH ₃	tert.-C ₄ H ₉
	CH ₃	CH ₃	n-C ₅ H ₁₁

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	R ⁷	R ⁶	R
	CH ₃	CH ₃	sec.-C ₅ H ₁₁
5	CH ₃	CH ₃	n-C ₆ H ₁₃
	CH ₃	CH ₃	n-C ₇ H ₁₅
	CH ₃	CH ₃	sec.-C ₇ H ₁₅
	CH ₃	CH ₃	ethoxy
	CH ₃	CH ₃	propoxy
10	CH ₃	CH ₃	1-methylethoxy
	CH ₃	CH ₃	n-butoxy
	CH ₃	CH ₃	1-methylpropoxy
	CH ₃	CH ₃	2-methylpropoxy
15	CH ₃	CH ₃	1,1-dimethylethoxy
	CH ₃	CH ₃	n-pentyloxy
	CH ₃	CH ₃	n-hexyloxy
	CH ₃	CH ₃	cyclopentyl
20	CH ₃	CH ₃	cyclopentenyl
	CH ₃	CH ₃	phenyl

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The novel active ingredients are particularly suitable for protecting various materials against degradation or destruction by bacteria or fungi or from being attacked by and covered with microorganisms. Examples of materials which can be preserved or microbically finished with the novel active ingredients are glues and adhesives, starch solutions, wax emulsions, clay emulsions, sizes, finishes, spinning baths, gelatine formulations, putty, joint sealants, cooling lubricants, drilling oils, fuels, plastic dispersions, emulsion paints, textiles, leather, raw hides and cosmetics. The compounds are also suitable as anti-slime agents in the paper industry, in cooling towers and in air moistening units.

The compounds I are also suitable for protecting the following plant species against attack by microorganisms:

cereals (e.g., wheat, barley, rye, oats, rice, sorghum and related species); beets (e.g., sugar and fodder beets); pomes, drupes and aggregate fruit (e.g., apples, pears, plums, peaches, almonds, cherries, strawberries, raspberries and blackberries); legumes (e.g., beans, lentils, peas, soybeans); oil-yielding crops (e.g., rape, mustard, poppies, olives, sunflowers, coconuts, castor-oil beans, cocoa beans, groundnuts); cucurbits (e.g., pumpkins, cucumbers, melons); fiber-yielding plants (e.g., cotton, flax, hemp, jute); citrus fruit (e.g., oranges, lemons, grapefruit, tangerines); vegetables (e.g., spinach, lettuce, asparagus, cabbage varieties, carrots, onions, tomatoes, potatoes, paprika); laurel species (e.g., avocado, cinnamomum, camphor) or plants such as Indian corn, tobacco, nuts, coffee, sugar cane, tea, grapes, hops, and banana and rubber trees. For the purposes of the present invention, the term "plants" is also taken to mean all types of other green growth, whether ornamentals, grassy areas, embankments, or generally low-growing cover crops.

For example the following microorganisms may be combatted with the novel compounds I:

Straphylococcus aureus, *Escherichia coli*, *Klebsiella pneumoniae*, *Citrobacter freundii*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Desulfovibrio desulfuricans*, *Streptovorticillium rubroreticuli*, *Aspergillus niger*, *Aspergillus versicolor*, *Penicillium funiculosum*, *Penicillium expansum*, *Penicillium glaucum*, *Paecilomyces variotii*, *Trichoderma viride*, *Chaetomium globosum*, *Aspergillus amstelodami*, *Phoma pigmentovora*, *Phoma violacea*, *Aureobasidium pullulans*, *Saccharomyces cerevisiae*, *Alternaria tenuis*, *Stemphylium macrosporoideum*, *Cladosporium herbarum*, *Cladosporium resinae*, *Candida albicans*, *Trichophyton mentagrophytes*, *Geotrichum candi-*

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dans, *Monilia sitophila*, *Scenedesmus quadricauda*, *Chlorella vulgaris*, *Nostoc muscorium*, *Oscillatoria limosa* and *Anabaena constricta*.

- 5 The novel substances can be converted into conventional formulations such as solutions, emulsions, suspensions, dusts, powders, pastes and granules. The application forms depend entirely on the purposes for which they are intended; they should at all events ensure a fine and uniform distribution of the active ingredient.
- 10 The formulations are produced in known manner, for example by extending the active ingredient with solvents and/or carriers, with or without the use of emulsifiers and dispersants; if water is used as solvent, it is also possible to employ other organic solvents as auxiliary solvents. Suitable auxiliaries for this
- 15 purpose are solvents such as aromatics (e.g., xylene), chlorinated aromatics (e.g., chlorobenzenes), paraffins (e.g., crude oil fractions), alcohols (e.g., methanol, butanol), ketones (e.g., cyclohexanone), amines (e.g., ethanolamine, dimethylformamide), and water; carriers such as ground natural minerals (e.g.,
- 20 kaolins, aluminas, talc and chalk) and ground synthetic minerals (e.g., highly disperse silica and silicates); emulsifiers such as nonionic and anionic emulsifiers (e.g., polyoxyethylene fatty alcohol ethers, alkyl sulfonates and aryl sulfonates); and dispersants such as lignin-sulfite waste liquors and methylcellulose.
- 25 lose.

The fungicides generally contain from 0.1 to 95, and preferably from 0.5 to 90, wt% of active ingredient. The active ingredients are used in a purity of from 90 to 100, and preferably from 95 to

30 100, % (according to the NMR/HPLC/GC spectrum).

Usual application concentrations are - based on the weight of the material to be protected - from 0.001 to 5, and preferably from 0.01 to 2, wt% of active ingredient; when the active ingredients

35 are used for treating water, in oil production, in drilling and cutting oils, fuels, in swimming baths, cooling towers, air moistening units or in the paper industry, amounts of from 5 to 500 ppm are sufficient. Ready-to-use disinfectant solutions contain for instance from 0.5 to 10wt% of active ingredient.

40

Examples of such formulations are given below:

- I. A solution of 90 parts by weight of compound no. 3 and 10 parts by weight of N-methyl- α -pyrrolidone, which is suitable for
- 45 application in the form of very fine drops.

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- II. A mixture of 20 parts by weight of compound no. 4, 80 parts by weight of xylene, 10 parts by weight of the adduct of 8 to 10 moles of ethylene oxide and 1 mole of oleic acid-N-monoethanolamide, 5 parts by weight of the calcium salt of dodecylbenzenesulfonic acid, and 5 parts by weight of the adduct of 40 moles of ethylene oxide and 1 mole of castor oil. By finely dispersing the mixture in 100,000 parts by weight of water, an aqueous dispersion is obtained.
- 10 III. An aqueous dispersion of 20 parts by weight of compound no. 1, 40 parts by weight of cyclohexanone, 30 parts by weight of isobutanol, 20 parts by weight of the adduct of 40 moles of ethylene oxide and 1 mole of castor oil. A mixture of this dispersion with 100,000 parts by weight of water contains 0.02wt% of
15 the active ingredient.
- IV. An aqueous dispersion of 20 parts by weight of compound no. 3, 25 parts by weight of cyclohexanol, 65 parts by weight of a mineral oil fraction having a boiling point between 210 and 280°C,
20 and 10 parts by weight of the adduct of 40 moles of ethylene oxide and 1 mole of castor oil. The mixture of this dispersion with 100,000 parts by weight of water contains 0.02wt% of the active ingredient.
- 25 V. A hammer-milled mixture of 80 parts by weight of compound no. 2, 3 parts by weight of the sodium salt of diisobutyl-naphthalene- α -sulfonic acid, 10 parts by weight of the sodium salt of a lignin-sulfonic acid obtained from a sulfite waste liquor, and 7 parts by weight of powdered silica gel. By finely dispersing the
30 mixture in 20,000 parts by weight of water, a spray liquor containing 0.1wt% of the active ingredient is obtained.
- VI. An intimate mixture of 3 parts by weight of compound no. 1 and 97 parts by weight of particulate kaolin. The dust contains
35 3wt% of the active ingredient.
- VII. An intimate mixture of 30 parts by weight of compound no. 4, 92 parts by weight of powdered silica gel and 8 parts by weight of paraffin oil sprayed onto the surface of this silica
40 gel. This formulation of the active ingredient exhibits good adherence.
- VIII. A stable aqueous dispersion of 40 parts by weight of compound no. 2, 10 parts of the sodium salt of a phenolsulfonic
45 acid-urea-formaldehyde condensate, 2 parts of silica gel and 48 parts of water, which dispersion can be further diluted.

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IX. A stable oily dispersion of 20 parts by weight of compound no. 3, 2 parts by weight of the calcium salt of dodecylbenzene-sulfonic acid, 8 parts by weight of a fatty alcohol polyglycol ether, 2 parts by weight of the sodium salt of a phenolsulfonic acid-urea-formaldehyde condensate and 68 parts by weight of a paraffinic mineral oil.

X. A hammer-milled mixture of 10 parts by weight of compound no. 1, 4 parts by weight of the sodium salt of diisobutyl-naphthalene-10 α -sulfonic acid, 20 parts by weight of the sodium salt of a lignin-sulfonic acid obtained from a sulfite waste liquor, 38 parts by weight of silica gel, and 38 parts by weight of kaolin. By finely dispersing the mixture in 10,000 parts by weight of water, a spray liquor containing 0.1wt% of the active ingredient 15 is obtained.

Used alone, the active ingredients act as low-foaming biocides. A significant increase in the action of biocidal formulations containing these compounds is achieved if tri-C₆- to C₁₂-alkylmethylammonium salts, preferably in amounts of from 20 to 40wt%, based 20 on the weight of compounds of the general formula I, are added.

The active ingredients may also be mixed with other, prior art, microbicides. In many instances, a synergistic effect is 25 achieved, i.e., the microbicidal action of the mixture is greater than the added actions of its individual components.

Prior art microbicides may be added to the novel substances in a weight ratio of from 1:100 to 100:1.

30

Examples of such active ingredients are as follows:

- 2-(thiocyanomethylthio)-benzothiazole
- 1-[2-(2,4-dichlorophenyl)-2-(2-propenyloxy)-ethyl]-1H-imidazole
- 35 2,4,5,6-tetrachloroisophthalodinitrile
- methylene bithiocyanate
- tributyltin oxide, naphthenate, benzoate, salicylate
- mercaptobenzothiazole
- 1,2-benzisothiazolone and its alkali metal salts
- 40 alkali metal compounds of N'-hydroxy-N-cyclohexyldiazenium oxide
- 2-(methoxycarbonylamino)-benzimidazole
- 2-methyl-3-oxo-5-chlorothiazolin-3-one
- trihydroxymethylnitromethane
- glutardialdehyde
- 45 chloroacetamide
- polyhexamethylene bisguanide
- 5-chloro-2-methyl-4-isothiazolin-3-one + magnesium salts

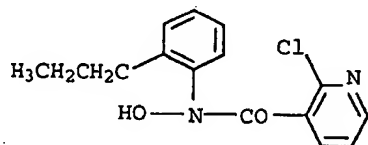
- 3,5-dimethyltetrahydro-1,3,5-2H-thiadiazine-2-thione
hexahydrotriazine
N,N-methylolchloroacetamide
2-n-octyl-4-isothiazolin-3-one
- 5 oxazolidines
bisoxazolidines
2,5-dihydro-2,5-dialkoxy-2,5-dialkylfurans
diethyldodecylbenzylammonium chloride
dimethyloctadecyldimethylbenzylammonium chloride
- 10 dimethyldidecylammonium chloride
dimethyldidodecylammonium chloride
trimethyltetradecylammonium chloride
benzyl dimethylalkyl-(C₁₂-C₁₈)-ammonium chloride
dichlorobenzyl dimethyldodecylammonium chloride
- 15 cetylpyridinium chloride
cetylpyridinium bromide
cetyltrimethylammonium chloride
laurylpyridinium chloride
laurylpyridinium bisulfate
- 20 benzyl dodecyl di(beta-oxyethyl)-ammonium chloride
dodecyl benzyl trimethylammonium chloride
n-alkyl dimethyl benzyl ammonium chloride
(alkyl radical: 40% C₁₂, 50% C₁₄, 10% C₁₆)
lauryl dimethylethyl ammonium ethyl sulfate
- 25 n-alkyl dimethyl-(1-naphthylmethyl)-ammonium chloride
(alkyl radical: 98% C₁₂, 2% C₁₄)
cetyl dimethyl benzyl ammonium chloride
lauryl dimethyl benzyl ammonium chloride
- 30 Examples of further compounds which may be admixed are:
- 1,3-dimethylol-5,5-dimethylhydantoin
dimethylolurea
tetramethylolacetylenediurea
- 35 dimethylolglyoxalmonoureine
hexamethylenetetramine
glyoxal
glutardialdehyde
N-methylolchloroacetamide
- 40 1-(hydroxymethyl)-5,5-dimethylhydantoin
1,3-bis-(hydroxymethyl)-5,5-dimethylhydantoin
imidazolidinylurea
1-(3-chloroallyl)-3,5,7-triaza-1-azonia-adamantan chloride
1,3-bis-(beta-ethylhexyl)-5-methyl-5-amino-hexahydropyrimidine
- 45 1,3,5-tris-(hydroxyethyl)-1,3,5-hexahydrotriazine
1,2-dibromo-2,4-dicyanobutane
5-bromo-5-nitro-1,3-dioxane

- 2-bromo-2-nitropropanediol
1,1'-hexamethylene-bis-[5-(4-chlorophenyl)-biguanide]
4,4-diaminodiphenoxypropane
2-bromo-2-nitropropane-1,3-diol
5 sorbic acid and its salts
p-hydroxybenzoic acid and its esters and salts
zinc-2-pyridinethiol-N-oxide
2-[(hydroxylmethyl)amino]-ethanol
dithio-2,2'-bis(benzmethylamide)
10 5-chloro-2-(2,4-dichlorophenoxy)-phenol
thio-bis-(4-chlorophenol)
o-phenylphenol
chloromethyl-diiodomethylsulfone
p-chlorophenyl-3-iodopropargylformal.
15
Synthesis examples

The directions given in the synthesis examples below were used, after appropriate modification of the starting materials, to obtain further compounds I. The compounds thus obtained are listed in the tables below with their physical data.

1. N-hydroxy-N-(2-propylphenyl)-2-chloronicotinamide

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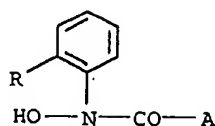
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- At 0°C, 14 ml of water and 19.6 g of sodium bicarbonate are added to a solution of 15.1 g of 2-n-propylphenylhydroxylamine in 75 ml of a 2:1 mixture of ether and ligroin, and 13.6 g of 2-chloronicotinamide is then dripped in while stirring vigorously. The mixture is stirred overnight at room temperature and then suction filtered. The residue is stirred for 15 minutes in 10% strength sodium bicarbonate solution, suction filtered, dissolved in ethyl acetate and dried, and the solvent is evaporated off under reduced pressure. From the crude product (14.6 g) there is isolated, after recrystallization from ethanol, 12.5 g of 2-chloro-40 nicotinic acid-N-hydroxy-2-n-propylanilide of m.p. 134-135°C.

45

Table 1

5



Example no.	R	A	Phys. data
1	CH(CH ₃) ₂	2-Cl-pyridin-3-yl	107-111°C
2	CH ₂ CH ₂ CH ₃	2-Cl-pyridin-3-yl	134-135°C
3	CH ₂ CH(CH ₃) ₂	2-Cl-pyridin-3-yl	oil
4	phenyl	2-Cl-pyridin-3-yl	112-115°C
5	CH ₂ CH(CH ₃) ₂	2-CH ₃ , 4-CF ₃ -thiazol-4-yl	oil
6	phenyl	2-CH ₃ , 4-CF ₃ -thiazol-4-yl	173-175°C
7	CH ₂ CH(CH ₃) ₂	2,4-(CH ₃) ₂ -thiazol-4-yl	oil
8	phenyl	2,4-(CH ₃) ₂ -thiazol-4-yl	58-62°C

Examples demonstrating biological action:

Action on Botrytis cinerea

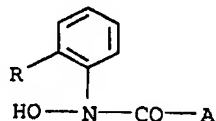
Slices of green paprika pods were sprayed to runoff with aqueous suspensions containing (dry basis) 80% of the active ingredient and 20% of emulsifier. After the sprayed-on layer had dried, the slices were sprayed with a spore suspension [1.7·10⁶ spores per ml; 2% biomalt; water] of the fungus Botrytis cinerea and then kept for 4 days at 18°C and in high humidity.

After this period, the untreated controls exhibited 90% fungus attack, whereas the paprika slices treated with 500 ppm of compounds nos. 1 and 2 exhibited 5% attack at most.

At an application rate of 1000 ppm of compounds nos. 1 and 2 the paprika slices exhibited no attack at all, whereas the slices treated with 1000 ppm of 2-chloronicotinic acid-2-chloroanilide exhibited 90% attack, just as the untreated controls.

We claim:

1. N-Hydroxy-N-phenylcarboxamides of the formula I



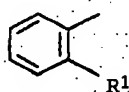
where:

R is C₂-C₁₂-alkyl, C₂-C₁₂-alkoxy, C₃-C₁₂-alkenyl, C₃-C₁₂-alkenyloxy, C₃-C₆-alkynyl or C₃-C₆-alkynyloxy, where these groups are partially or completely halogenated;

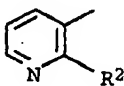
C₃-C₇-cycloalkyl, C₄-C₇-cycloalkenyl, C₃-C₇-cycloalkyloxy or C₄-C₇-cycloalkenyloxy, where these rings may bear from one to three C₁-C₄-alkyl groups;

phenyl, which may bear from one to five halogen atoms and/or from one to three of the following radicals: C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylthio or C₁-C₄-haloalkylthio;

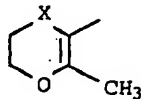
A is a cyclic radical selected from the group of formulae A1 to A7



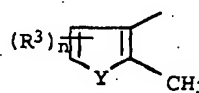
A1



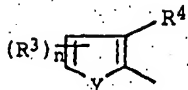
A2



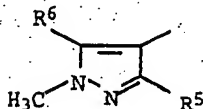
A3



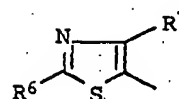
A4



A5



A6



A7

where:

- X is $-\text{CH}_2-$, $-\text{S}-$, $-\text{SO}-$ or $-\text{SO}_2-$;
Y is $-\text{O}-$ or $-\text{S}-$;
 R^1 , R^2 , R^4 , R^5 and R^7 are halogen, C_1 - C_4 -alkyl or C_1 - C_4 -halo-alkyl;
5 R^3 and R^6 are hydrogen, halogen or C_1 - C_4 -alkyl;
n is 1 or 2, and the radicals R^3 may be different when n is 2.
2. N-Hydroxy-N-phenylcarboxamides of the formula I as claimed in
10 claim 1, where R has the meanings given in claim 1 and A is a cyclic radical selected from the group having the formulae A1 to A7, where X and Y have the meanings given in claim 1 and the substituents have the following meanings:
- 15 R^1 is halogen, methyl or C_1 -haloalkyl;
 R^2 is halogen or C_1 -haloalkyl;
 R^3 is hydrogen or methyl;
n is 1 or 2, and the radicals R^3 may be different when n is 2;
- 20 R^4 is halogen or methyl;
 R^5 is methyl or C_1 -haloalkyl;
 R^6 is hydrogen, halogen or methyl;
 R^7 is halogen, methyl or C_1 -haloalkyl.
- 25 3. N-Hydroxy-N-phenylcarboxamides of the formula I as claimed in claim 1, where R has the meanings given in claim 1 and A is cyclic radical selected from the group having the formulae A1 to A7, where X and Y have the meanings given in claim 1 and the substituents have the following meanings:
- 30 R^1 is chloro, bromo, iodo, methyl or trifluoromethyl;
 R^2 is chloro or trifluoromethyl;
 R^3 is hydrogen or methyl;
n is 1 or 2, and the radicals R^3 may be different when n is 2;
- 35 R^4 is chloro or methyl;
 R^5 is methyl, difluoromethyl or trifluoromethyl;
 R^6 is hydrogen, chloro or methyl;
 R^7 is chloro, methyl or trifluoromethyl.
- 40 4. An agent for combatting injurious fungi, containing a fungicidal amount of a compound of the formula I as claimed in claim 1, 2 or 3, and inert additives.
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5. A process for combatting injurious fungi, wherein the fungi, their habitat and/or the plants or materials to be kept free from fungi are treated with a fungicidally effective amount of a compound of the formula I as claimed in claim 1, 2 or 3.
- 5
6. The use of compounds I as claimed in claim 1, 2 or 3 for combatting injurious fungi.
7. The use of compounds I as claimed in claim 1, 2 or 3 for combatting Botrytis.
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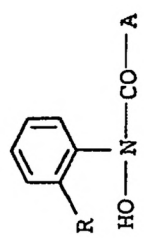
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